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SEQUENCE LISTING

<110> Clausen, Henrik
Amado, Margarita

<120> UDP-GALACTOSE: BETA-N-ACETYL-GLUCOSAMINE BETA 1,3
GALACTOSYLTRANSFERASES, BETAGAL-T5

<130> 7188-157

<140>

<141>

<160> 17

<170> PatentIn Ver. 2.0

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<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PRIMER

<400> 1

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<400> 2

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<210> 4

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<223> Description of Artificial Sequence: PRIMER

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21

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<213> Artificial Sequence

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<223> Description of Artificial Sequence: PRIMER

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<223> Description of Artificial Sequence: PRIMER

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21

<210> 7

<211> 21

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<211> 1011

<212> DNA

<213> Homo sapiens

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ggattttgtt ccttttcag atg gct ttc ccg aag atg aga ttg atg tat atc 111

Met Ala Phe Pro Lys Met Arg Leu Met Tyr Ile

1

5

10

tgc ctt ctg gtt ctg ggg gct ctt tgt ttg tat ttt agc atg tac agt	159
Cys Leu Leu Val Leu Gly Ala Leu Cys Leu Tyr Phe Ser Met Tyr Ser	
15 20 25	
cta aat cct ttc aaa gaa cag tcc ttt gtt tac aag aaa gac ggg aac	207
Leu Asn Pro Phe Lys Glu Gln Ser Phe Val Tyr Lys Lys Asp Gly Asn	
30 35 40	
ttc ctt aag ctc cca gat aca gac tgc agg cag aca cct ccc ttc ctc	255
Phe Leu Lys Leu Pro Asp Thr Asp Cys Arg Gln Thr Pro Pro Phe Leu	
45 50 55	
gtc ctg ctg gtg acc tca tcc cac aaa cag ttg gct gag cgc atg gcc	303
Val Leu Leu Val Thr Ser Ser His Lys Gln Leu Ala Glu Arg Met Ala	
60 65 70 75	
atc cgg cag acg tgg ggg aaa gag agg acg gtg aag gga aag cag ctg	351
Ile Arg Gln Thr Trp Gly Lys Glu Arg Thr Val Lys Gly Lys Gln Leu	
80 85 90	
aag aca ttc ttc ctc ctg ggg acc acc agc agt gca gcg gaa aca aaa	399
Lys Thr Phe Phe Leu Leu Gly Thr Thr Ser Ser Ala Ala Glu Thr Lys	
95 100 105	
gag gtg gac cag gag agc cag cga cac ggg gac att atc cag aag gat	447
Glu Val Asp Gln Glu Ser Gln Arg His Gly Asp Ile Ile Gln Lys Asp	
110 115 120	
ttc cta gac gtc tat tac aat ctg acc ctg aag acc atg atg ggc ata	495
Phe Leu Asp Val Tyr Tyr Asn Leu Thr Leu Lys Thr Met Met Gly Ile	
125 130 135	
gaa tgg gtc cat cgc ttt tgt cct cag gcg gcg ttt gtg atg aaa aca	543
Glu Trp Val His Arg Phe Cys Pro Gln Ala Ala Phe Val Met Lys Thr	
140 145 150 155	
gac tca gac atg ttc atc aat gtt gac tat ctg act gaa ctg ctt ctg	591
Asp Ser Asp Met Phe Ile Asn Val Asp Tyr Leu Thr Glu Leu Leu Leu	
160 165 170	
aag aaa aac aga aca acc agg ttt ttc act ggc ttc ttg aaa ctc aat	639
Lys Lys Asn Arg Thr Thr Arg Phe Phe Thr Gly Phe Leu Lys Leu Asn	
175 180 185	
gag ttt ccc atc agg cag cca ttc agc aag tgg ttt gtc agt aaa tct	687
Glu Phe Pro Ile Arg Gln Pro Phe Ser Lys Trp Phe Val Ser Lys Ser	
190 195 200	
gaa tat ccg tgg gac agg tac cca cca ttc tgc tcc ggc acc ggc tac	735
Glu Tyr Pro Trp Asp Arg Tyr Pro Pro Phe Cys Ser Gly Thr Gly Tyr	
205 210 215	
gtg ttt tct ggc gac gtg gcg agt cag gtg tac aat gtc tcc aag agc	783
Val Phe Ser Gly Asp Val Ala Ser Gln Val Tyr Asn Val Ser Lys Ser	
220 225 230 235	

gtc cca tac att aaa ctg gaa gac gtg ttt gtg ggg ctc tgc ctc gaa 831
 Val Pro Tyr Ile Lys Leu Glu Asp Val Phe Val Gly Leu Cys Leu Glu
 240 245 250

agg ctg aac atc aga ttg gag gag ctc cac tcc cag ccg acc ttt ttt 879
 Arg Leu Asn Ile Arg Leu Glu Glu Leu His Ser Gln Pro Thr Phe Phe
 255 260 265

cca ggg ggc tta cgc ttc tcc gta tgc ctc ttc agg agg atc gtg gcc 927
 Pro Gly Gly Leu Arg Phe Ser Val Cys Leu Phe Arg Arg Ile Val Ala
 270 275 280

tgc cac ttc atc aag cct cgg act ctc ttg gac tac tgg cag gct cta 975
 Cys His Phe Ile Lys Pro Arg Thr Leu Leu Asp Tyr Trp Gln Ala Leu
 285 290 295

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 Glu Asn Ser Arg Gly Glu Asp Cys Pro Pro Val
 300 305 310

<210> 9
 <211> 310
 <212> PRT
 <213> Homo sapiens

<400> 9
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 1 5 10 15

Gly Ala Leu Cys Leu Tyr Phe Ser Met Tyr Ser Leu Asn Pro Phe Lys
 20 25 30

Glu Gln Ser Phe Val Tyr Lys Lys Asp Gly Asn Phe Leu Lys Leu Pro
 35 40 45

Asp Thr Asp Cys Arg Gln Thr Pro Pro Phe Leu Val Leu Leu Val Thr
 50 55 60

Ser Ser His Lys Gln Leu Ala Glu Arg Met Ala Ile Arg Gln Thr Trp
 65 70 75 80

Gly Lys Glu Arg Thr Val Lys Gly Lys Gln Leu Lys Thr Phe Phe Leu
 85 90 95

Leu Gly Thr Thr Ser Ser Ala Ala Glu Thr Lys Glu Val Asp Gln Glu
 100 105 110

Ser Gln Arg His Gly Asp Ile Ile Gln Lys Asp Phe Leu Asp Val Tyr
 115 120 125

Tyr Asn Leu Thr Leu Lys Thr Met Met Gly Ile Glu Trp Val His Arg
 130 135 140

Phe Cys Pro Gln Ala Ala Phe Val Met Lys Thr Asp Ser Asp Met Phe
 145 150 155 160

Ile Asn Val Asp Tyr Leu Thr Glu Leu Leu Leu Lys Lys Asn Arg Thr
 165 170 175
 Thr Arg Phe Phe Thr Gly Phe Leu Lys Leu Asn Glu Phe Pro Ile Arg
 180 185 190
 Gln Pro Phe Ser Lys Trp Phe Val Ser Lys Ser Glu Tyr Pro Trp Asp
 195 200 205
 Arg Tyr Pro Pro Phe Cys Ser Gly Thr Gly Tyr Val Phe Ser Gly Asp
 210 215 220
 Val Ala Ser Gln Val Tyr Asn Val Ser Lys Ser Val Pro Tyr Ile Lys
 225 230 235 240
 Leu Glu Asp Val Phe Val Gly Leu Cys Leu Glu Arg Leu Asn Ile Arg
 245 250 255
 Leu Glu Glu Leu His Ser Gln Pro Thr Phe Phe Pro Gly Gly Leu Arg
 260 265 270
 Phe Ser Val Cys Leu Phe Arg Arg Ile Val Ala Cys His Phe Ile Lys
 275 280 285
 Pro Arg Thr Leu Leu Asp Tyr Trp Gln Ala Leu Glu Asn Ser Arg Gly
 290 295 300
 Glu Asp Cys Pro Pro Val
 305 310

<210> 10
 <211> 422
 <212> PRT
 <213> Homo sapiens

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 Asn Ala Lys Arg Ser Leu Phe Arg Thr His Leu Ile Gly Val Leu Ser
 20 25 30
 Leu Val Phe Leu Phe Ala Met Phe Leu Phe Phe Asn His His Asp Trp
 35 40 45
 Leu Pro Gly Arg Ala Gly Phe Lys Glu Asn Pro Val Thr Tyr Thr Phe
 50 55 60
 Arg Gly Phe Arg Ser Thr Lys Ser Glu Thr Asn His Ser Ser Leu Arg
 65 70 75 80
 Asn Ile Trp Lys Glu Thr Val Pro Gln Thr Leu Arg Pro Gln Thr Ala
 85 90 95
 Thr Asn Ser Asn Asn Thr Asp Leu Ser Pro Gln Gly Val Thr Gly Leu
 100 105 110

Glu Asn Thr Leu Ser Ala Asn Gly Ser Ile Tyr Asn Glu Lys Gly Thr
 115 120 125
 Gly His Pro Asn Ser Tyr His Phe Lys Tyr Ile Ile Asn Glu Pro Glu
 130 135 140
 Lys Cys Gln Glu Lys Ser Pro Phe Leu Ile Leu Leu Ile Ala Ala Glu
 145 150 155 160
 Pro Gly Gln Ile Glu Ala Arg Arg Ala Ile Arg Gln Thr Trp Gly Asn
 165 170 175
 Glu Ser Leu Ala Pro Gly Ile Gln Ile Thr Arg Ile Phe Leu Leu Gly
 180 185 190
 Leu Ser Ile Lys Leu Asn Gly Tyr Leu Gln Arg Ala Ile Leu Glu Glu
 195 200 205
 Ser Arg Gln Tyr His Asp Ile Ile Gln Gln Glu Tyr Leu Asp Thr Tyr
 210 215 220
 Tyr Asn Leu Thr Ile Lys Thr Leu Met Gly Met Asn Trp Val Ala Thr
 225 230 235 240
 Tyr Cys Pro His Ile Pro Tyr Val Met Lys Thr Asp Ser Asp Met Phe
 245 250 255
 Val Asn Thr Glu Tyr Leu Ile Asn Lys Leu Leu Lys Pro Asp Leu Pro
 260 265 270
 Pro Arg His Asn Tyr Phe Thr Gly Tyr Leu Met Arg Gly Tyr Ala Pro
 275 280 285
 Asn Arg Asn Lys Asp Ser Lys Trp Tyr Met Pro Pro Asp Leu Tyr Pro
 290 295 300
 Ser Glu Arg Tyr Pro Val Phe Cys Ser Gly Thr Gly Tyr Val Phe Ser
 305 310 315 320
 Gly Asp Leu Ala Glu Lys Ile Phe Lys Val Ser Leu Gly Ile Arg Arg
 325 330 335
 Leu His Leu Glu Asp Val Tyr Val Gly Ile Cys Leu Ala Lys Leu Arg
 340 345 350
 Ile Asp Pro Val Pro Pro Pro Asn Glu Phe Val Phe Asn His Trp Arg
 355 360 365
 Val Ser Tyr Ser Ser Cys Lys Tyr Ser His Leu Ile Thr Ser His Gln
 370 375 380
 Phe Gln Pro Ser Glu Leu Ile Lys Tyr Trp Asn His Leu Gln Gln Asn
 385 390 395 400
 Lys His Asn Ala Cys Ala Asn Ala Ala Lys Glu Lys Ala Gly Arg Tyr
 405 410 415

Arg His Arg Lys Leu His
420

<210> 11
<211> 326
<212> PRT
<213> Homo sapiens

<400> 11
Met Ala Ser Lys Val Ser Cys Leu Tyr Val Leu Thr Val Val Cys Trp
1 5 10 15
Ala Ser Ala Leu Trp Tyr Leu Ser Ile Thr Arg Pro Thr Ser Ser Tyr
20 25 30
Thr Gly Ser Lys Pro Phe Ser His Leu Thr Val Ala Arg Lys Asn Phe
35 40 45
Thr Phe Gly Asn Ile Arg Thr Arg Pro Ile Asn Pro His Ser Phe Glu
50 55 60
Phe Leu Ile Asn Glu Pro Asn Lys Cys Glu Lys Asn Ile Pro Phe Leu
65 70 75 80
Val Ile Leu Ile Ser Thr Thr His Lys Glu Phe Asp Ala Arg Gln Ala
85 90 95
Ile Arg Glu Thr Trp Gly Asp Glu Asn Asn Phe Lys Gly Ile Lys Ile
100 105 110
Ala Thr Leu Phe Leu Leu Gly Lys Asn Ala Asp Pro Val Leu Asn Gln
115 120 125
Met Val Glu Gln Glu Ser Gln Ile Phe His Asp Ile Ile Val Glu Asp
130 135 140
Phe Ile Asp Ser Tyr His Asn Leu Thr Leu Lys Thr Leu Met Gly Met
145 150 155 160
Arg Trp Val Ala Thr Phe Cys Ser Lys Ala Lys Tyr Val Met Lys Thr
165 170 175
Asp Ser Asp Ile Phe Val Asn Met Asp Asn Leu Ile Tyr Lys Leu Leu
180 185 190
Lys Pro Ser Thr Lys Pro Arg Arg Arg Tyr Phe Thr Gly Tyr Val Ile
195 200 205
Asn Gly Gly Pro Ile Arg Asp Val Arg Ser Lys Trp Tyr Met Pro Arg
210 215 220
Asp Leu Tyr Pro Asp Ser Asn Tyr Pro Pro Phe Cys Ser Gly Thr Gly
225 230 235 240
Tyr Ile Phe Ser Ala Asp Val Ala Glu Leu Ile Tyr Lys Thr Ser Leu
245 250 255

His Thr Arg Leu Leu His Leu Glu Asp Val Tyr Val Gly Leu Cys Leu
 260 265 270

Arg Lys Leu Gly Ile His Pro Phe Gln Asn Ser Gly Phe Asn His Trp
 275 280 285

Lys Met Ala Tyr Ser Leu Cys Arg Tyr Arg Arg Val Ile Thr Val His
 290 295 300

Gln Ile Ser Pro Glu Glu Met His Arg Ile Trp Asn Asp Met Ser Ser
 305 310 315 320

Lys Lys His Leu Arg Cys
 325

<210> 12

<211> 331

<212> PRT

<213> Homo sapiens

<400> 12

Met Ala Ser Ala Leu Trp Thr Val Leu Pro Ser Arg Met Ser Leu Arg
 1 5 10 15

Ser Leu Lys Trp Ser Leu Leu Leu Leu Ser Leu Leu Ser Phe Phe Val
 20 25 30

Met Trp Tyr Leu Ser Leu Pro His Tyr Asn Val Ile Glu Arg Val Asn
 35 40 45

Trp Met Tyr Phe Tyr Glu Tyr Glu Pro Ile Tyr Arg Gln Asp Phe His
 50 55 60

Phe Thr Leu Arg Glu His Ser Asn Cys Ser His Gln Asn Pro Phe Leu
 65 70 75 80

Val Ile Leu Val Thr Ser His Pro Ser Asp Val Lys Ala Arg Gln Ala
 85 90 95

Ile Arg Val Thr Trp Gly Glu Lys Lys Ser Trp Trp Gly Tyr Glu Val
 100 105 110

Leu Thr Phe Phe Leu Leu Gly Gln Glu Ala Glu Lys Glu Asp Lys Met
 115 120 125

Leu Ala Leu Ser Leu Glu Asp Glu His Leu Leu Tyr Gly Asp Ile Ile
 130 135 140

Arg Gln Asp Phe Leu Asp Thr Tyr Asn Asn Leu Thr Leu Lys Thr Ile
 145 150 155 160

Met Ala Phe Arg Trp Val Thr Glu Phe Cys Pro Asn Ala Lys Tyr Val
 165 170 175

Met Lys Thr Asp Thr Asp Val Phe Ile Asn Thr Gly Asn Leu Val Lys
 180 185 190

Tyr Leu Leu Asn Leu Asn His Ser Glu Lys Phe Phe Thr Gly Tyr Pro
 195 200 205
 Leu Ile Asp Asn Tyr Ser Tyr Arg Gly Phe Tyr Gln Lys Thr His Ile
 210 215 220
 Ser Tyr Gln Glu Tyr Pro Phe Lys Val Phe Pro Pro Tyr Cys Ser Gly
 225 230 235 240
 Leu Gly Tyr Ile Met Ser Arg Asp Leu Val Pro Arg Ile Tyr Glu Met
 245 250 255
 Met Gly His Val Lys Pro Ile Lys Phe Glu Asp Val Tyr Val Gly Ile
 260 265 270
 Cys Leu Asn Leu Leu Lys Val Asn Ile His Ile Pro Glu Asp Thr Asn
 275 280 285
 Leu Phe Phe Leu Tyr Arg Ile His Leu Asp Val Cys Gln Leu Arg Arg
 290 295 300
 Val Ile Ala Ala His Gly Phe Ser Ser Lys Glu Ile Ile Thr Phe Trp
 305 310 315 320
 Gln Val Met Leu Arg Asn Thr Thr Cys His Tyr
 325 330

<210> 13
 <211> 378
 <212> PRT
 <213> Homo sapiens

<400> 13
 Met Gln Leu Arg Leu Phe Arg Arg Leu Leu Leu Ala Ala Leu Leu Leu
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 Val Ile Val Trp Thr Leu Phe Gly Pro Ser Gly Leu Gly Glu Glu Leu
 20 25 30
 Leu Ser Leu Ser Leu Ala Ser Leu Leu Pro Ala Pro Ala Ser Pro Gly
 35 40 45
 Pro Pro Leu Ala Leu Pro Arg Leu Leu Ile Pro Asn Gln Glu Ala Cys
 50 55 60
 Ser Gly Pro Gly Ala Pro Pro Phe Leu Leu Ile Leu Val Cys Thr Ala
 65 70 75 80
 Pro Glu Asn Leu Asn Gln Arg Asn Ala Ile Arg Ala Ser Trp Gly Gly
 85 90 95
 Leu Arg Glu Ala Arg Gly Leu Arg Val Gln Thr Leu Phe Leu Leu Gly
 100 105 110
 Glu Pro Asn Ala Gln His Pro Val Trp Gly Ser Gln Gly Ser Asp Leu
 115 120 125

Ala Ser Glu Ser Ala Ala Gln Gly Asp Ile Leu Gln Ala Ala Phe Gln
 130 135 140
 Asp Ser Tyr Arg Asn Leu Thr Leu Lys Thr Leu Ser Gly Leu Asn Trp
 145 150 155 160
 Ala Glu Lys His Cys Pro Met Ala Arg Tyr Val Leu Lys Thr Asp Asp
 165 170 175
 Asp Val Tyr Val Asn Val Pro Glu Leu Val Ser Glu Leu Val Leu Arg
 180 185 190
 Gly Gly Arg Trp Gly Gln Trp Glu Arg Ser Thr Glu Pro Gln Arg Glu
 195 200 205
 Ala Glu Gln Glu Gly Gly Gln Val Leu His Ser Glu Glu Val Pro Leu
 210 215 220
 Leu Tyr Leu Gly Arg Val His Trp Arg Val Asn Pro Ser Arg Thr Pro
 225 230 235 240
 Gly Gly Arg Gly Arg Val Ser Glu Glu Gln Trp Pro His Thr Trp Gly
 245 250 255
 Pro Phe Pro Pro Tyr Ala Ser Gly Thr Gly Tyr Val Leu Ser Ala Ser
 260 265 270
 Ala Val Gln Leu Ile Leu Lys Val Ala Ser Arg Ala Pro Leu Leu Pro
 275 280 285
 Leu Glu Asp Val Phe Val Gly Val Ser Ala Arg Arg Gly Gly Leu Ala
 290 295 300
 Pro Thr Gln Cys Val Lys Leu Ala Gly Ala Thr His Tyr Pro Leu Asp
 305 310 315 320
 Arg Cys Cys Tyr Gly Lys Phe Leu Leu Thr Ser His Arg Leu Asp Pro
 325 330 335
 Trp Lys Met Gln Glu Ala Trp Lys Leu Val Gly Gly Ser Asp Gly Glu
 340 345 350
 Arg Thr Ala Pro Phe Cys Ser Trp Phe Gln Gly Val Leu Gly Ile Leu
 355 360 365
 Arg Cys Arg Ala Ile Ala Trp Leu Gln Ser
 370 375

<210> 14

<211> 30

<212> DNA

<213> Homo sapiens

<400> 14

cgggggtaccg gaaacgatga aatatacaag

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<210> 15
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<212> DNA
<213> Homo sapiens

<400> 15
ggcggatcca ggcagatcac agccaagaga acccaaaacg

40

<210> 16
<211> 40
<212> DNA
<213> Homo sapiens

<400> 16
gcggatccca ggcagatcac agccaagaga acccaaaacg

40

<210> 17
<211> 41
<212> DNA
<213> Homo sapiens

<400> 17
gcggatcccc aggcagatca cagccaagag aaccctaaaac g

41